

## PATENT ABSTRACTS OF JAPAN

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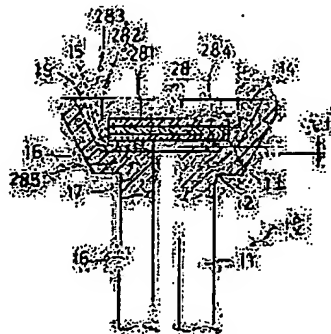
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### (54) LIGHT-EMITTING DIODE

#### (57)Abstract:

PURPOSE: To eliminate the inclination of an optical axis of light radiated from a light-emitting chip by a method wherein two lead member where flat parts on which the light-emitting chip is mounted and bonded by a solder bump are provided and the height of the flat parts of the two lead members is made different.

CONSTITUTION: Since an electrode part 284 of an n-GaN layer 282 for a light-emitting chip 28 is formed by utilizing the inside of a hole made in one part of an n-GaN layer 283; it is not possible to make its size as large as an electrode part 285 of the i-GaN layer 283. When solder bumps 15 are formed at the electrode parts 284, 285, the difference  $\Delta$  in a height between the solder bumps is caused in proportion to the area ratio of the electrode area of the i-GaN layer to the electrode area of the n-GaN layer. When the difference in a level of the nearly same size is formed at flat parts 13, 18 of lead members 11, 16 so as to correspond to the difference  $\Delta$  in the height between the bumps, light radiated from the surface of the bonded light-emitting chip 28 is in the designed optical-axis direction decided by the flat parts 13, 18 of the lead members 11, 16 and is stabilized.



### LEGAL STATUS

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